## REMARKS

The Office Action mailed December 24, 2002 has been carefully reviewed and the foregoing amendments are made in response thereto. In view of the amendments and the following remarks, Applicants respectfully request reconsideration of this application and the timely allowance of the pending claims. Applicants respectfully submit that no prohibited new matter has been introduced by the amendments. Entry of the amendments is respectfully requested.

### Summary of the Office Action

Claims 34 to 40 and 42 to 46 stand rejected under 35 U.S.C. 112 (first paragraph) as allegedly not meeting the written description requirement. An advisory action dated October 22, 2003 was issued by the Examiner where the final rejection was maintained despite the Amendment under 37 C.F.R. 1.116 filed on September 29, 2003.

### Status of the Claims

Upon entry of the foregoing amendment, claims 34 to 40 and 42 to 46 will be pending.

### Rejection of Claims under 35 U.S.C. 112 (first paragraph)

Claims 34 to 40 and 42 to 46 stand rejected under 35 U.S.C. 112 (first paragraph) for allegedly containing subject matter not described in the specification in such a way as to reasonably convey that Applicants had possession of the claimed invention at the time of filing. Applicants respectfully traverse the rejection and request reconsideration in light of the following remarks.

The rejection based on claim 34 part (1) has been withdrawn. Applicants note the comments made on page 2 of the Office Action with respect to support in the specification for 20-mers. While Applicants acknowledge withdrawal of the rejection, Applicants maintain that the specification fully supports the claimed range.

The rejection based on claim 34 part (2) indicates that this portion of the claim recites a group of internucleotide linkages. The Office Action mailed March 18, 2002 alleges that since a group of internucleotide linkages is disclosed in connection with end-blocked oligonucleotides at page 13, lines 12 to 24, end-blocked oligonucleotides should be a recited claim limitation. The Office Action mailed December 24, 2002 alleges that since a group of internucleotide linkages is disclosed in connection with completely derivatized oligonucleotides at page 16, lines 13 to 25, completely derivatized

oligonucleotides should be a recited claim limitation. Applicants respectfully traverse the rejection, and similar rejections made in the Office Action, for the following reasons.

> As Applicants expressly state in the specification on page 5, lines 10 to 14:
>
> [i]t is to be understood that this invention is not limited to the particular methodology, support surfaces, materials and modifications described and as such may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to limit the scope of the present invention which will be limited only by the appended claims. [emphasis added]

Even without the recitation quoted above, Applicants assert that there is no requirement in the patent law that claims be limited to the specific embodiments shown in the specification. Such a requirement has been described by the courts as an "exultation of form over substance" because it is well established that it is not necessary to disclose each and every embodiment of a claim in order to meet the written description requirement under 35 U.S.C. 112 (first paragraph). See *In Re Rasmussen* 650 F.2d 1212, 1215 (1981 CCPA).

The instant specification discloses embodiments of the claimed invention that were not, and are not, intended to limit the scope of the invention. As Applicants expressly point out, the modifications made to the oligonucleotides and the arrays described in the specification can vary. This aspect of the invention was fully contemplated by Applicants at the time of filing and is the reason why the passage quoted above was included into the specification when it was drafted. Evidence of this intent may be found in the two passages cited above at pages 13 and 16 of the specification. Applicants clearly intended that the group of internucleotide linkages recited in these passages not be limited to one or the other of these embodiments.

The recited internucleotide modifications are available in connection with other modifications of the oligonucleotides of the invention and the specification is replete with statements intended to convey this concept. For example, in the paragraph spanning pages 6 to 7 of the specification, Applicants list various combinations of modifications that may be made to the oligonucleotides of the invention and expressly state that the terms "modified oligonucleotide" and "modified polynucleotide" refer to "oligonucleotides and/or polynucleotides with one or more chemical modifications at the molecular level of the natural molecular structures of all or any of the bases, sugar moieties, internucleoside phosphate linkages, as well as to molecules having added substituents . . . **or a combination of modifications at these sites** ... The modifications can be internal (single or repeated) or at the end(s) of the oligonucleotide

molecule, and can include additions to the molecule of the internucleoside phosphate linkages" (see page 6, line 24 through page 7, line 1 and page 7, lines 7-9).

It is respectfully submitted that requiring Applicants to generate a list for inclusion into the specification of every possible combination, sub-combination and variation of the disclosed arrays and components thereof would not only be overly burdensome, but also is not required by the patent law. Applicants have fully described the claimed invention in the specification as-filed because all of the limitations present in the claims are supported by the application as it was originally drafted. Nonetheless, in an effort to advance prosecution and without acquiescing to the merits of the rejection, Applicants have amended claim 34, part (2) so that it now features only two types of internucleotide linkages. Applicants submit that the specification discloses all that is necessary for the skilled artisan to determine the claimed characteristics of the array, including all subgenus of arrays having a combination of the two types of the internucleotide linkages set forth in claim 34, part (2). For example, on page 8, lines 6 to 8, it is disclosed that the 2' position of the sugar group for RNA or DNA can be altered to 2'-O-alkyl or 2'-O-alkyl-n(alkyl).

The Office Action asserts that there is no support in the specification for recitation in claim 34 of "oligonucleotides of one distinct area of the array exhibit substantially the same $T_m$ when bound to a target nucleic acid as oligonucleotides of another distinct area of the array." Applicants respectfully disagree. The specification discloses that "the modified oligonucleotides and/or polynucleotides of the array may be synthesized to have approximately the same $T_m$ by varying the length of the nucleic acids in each composition" (see page 4, lines 9 to 11). It is respectfully submitted that the specification provides ample support for the claim because the characteristics of the oligonucleotides of the array are adequately described in the specification. Moreover, it is an inherent property of any two oligonucleotides of the array that they will occupy distinct areas on the array and the skilled artisan would understand as such in view of the specification.

Applicants note that prior rejections of claims 35 and 36 have been withdrawn but they remain rejected for their dependence on claim 34.

Claim 34 part (5), and claims 40, 42 and 46 stand rejected because it is alleged that the originally filed claims provide support for some combinations of characteristics of an array based upon their dependencies, but they do not disclose the particular combination of characteristics now claimed. Applicants respectfully traverse the rejection for the following reasons.

Claim 35 part (5) [now part 4] recites modified oligonucleotides having a pH stability of at least one hour at 37°C at a pH in a range of about 0.5 to 6. Support for this limitation may be found throughout the specification and claims as originally filed and, for example, as acknowledged in the previous Office Action dated March 18, 2002, in original claims 10 and 12.

Claim 40 recites modification of at least 25% of their internucleoside linkages. Support for this limitation may be found throughout the specification and claims as originally filed and, for example, as acknowledged in the previous Office Action, in original claim 13.

Claim 42 recites that the modified oligonucleotides have an average length of from about 100 to about 200 nucleotides. Support for this limitation may be found throughout the specification and claims as originally filed and, for example, as acknowledged in the previous Office Action, in original claim 5.

Claim 46 recites the number of oligonucleotide compositions on said array ranges from 2 to about $10^9$. Support for this limitation may be found throughout the specification and claims as originally filed and, for example, as acknowledged in the previous Office Action, in original claim 9.

The Office Action alleges that the characteristics of pH stability, percent modification of internucleoside linkages, oligonucleotide length and number of oligonucleotides on the claimed arrays are not described in combination with one another in specific embodiments and are therefore not supported by the specification (see page 4). Applicants respectfully disagree.

As discussed previously, Applicants assert that the application must be taken as a whole and not narrowly interpreted to be limited by specific embodiments. Applicants reiterate that this invention is not limited to the particular methodology, support surfaces, materials and modifications described and as such may vary. Applicants assert that they should not be required to list every possible combination and sub-combination of oligonucleotide pH stability, percent internucleoside linkage content and oligonucleotide length in the specification because Applicants have clearly stated that these modifications my vary in their combination. Applicants have provided a full and complete disclosure of the invention and, as the Office Action acknowledges, complete support for the all of the claim limitations exists in the specification. Withdrawal of the rejections is requested.

**Conclusion**

In view of the foregoing remarks, Applicants respectfully request withdrawal of all outstanding rejections and early notice of allowance to that effect. Should the Examiner believe that a telephonic

interview would expedite prosecution and allowance of this application, she is encouraged to contact the undersigned at her convenience.

Except for issue fees payable under 37 C.F.R. 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0310. This paragraph is intended to be a **constructive petition for extension of time** in accordance with 37 C.F.R. 1.136(a)(3).

The foregoing remarks are being made to place the application in condition for allowance. Applicant respectfully requests reconsideration and the timely allowance of the pending claims. A favorable action is awaited. Should the Examiner find that an interview would be helpful to further prosecution of this application, he is invited to telephone the undersigned at their convenience. If there are any filing or claim fees due in connection with the filing of this amendment, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for any extension of time under 37 C.F.R. 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted
**Morgan, Lewis & Bockius LLP**

Robert Smyth
Registration No. 50,801

Dated: **December 24, 2003**
Morgan, Lewis & Bockius LLP
Customer No. **09629**
1111 Pennsylvania Avenue, N.W.
Washington, D.C. 20004
202-739-3000